ENGINEERING NEWS-RECORD

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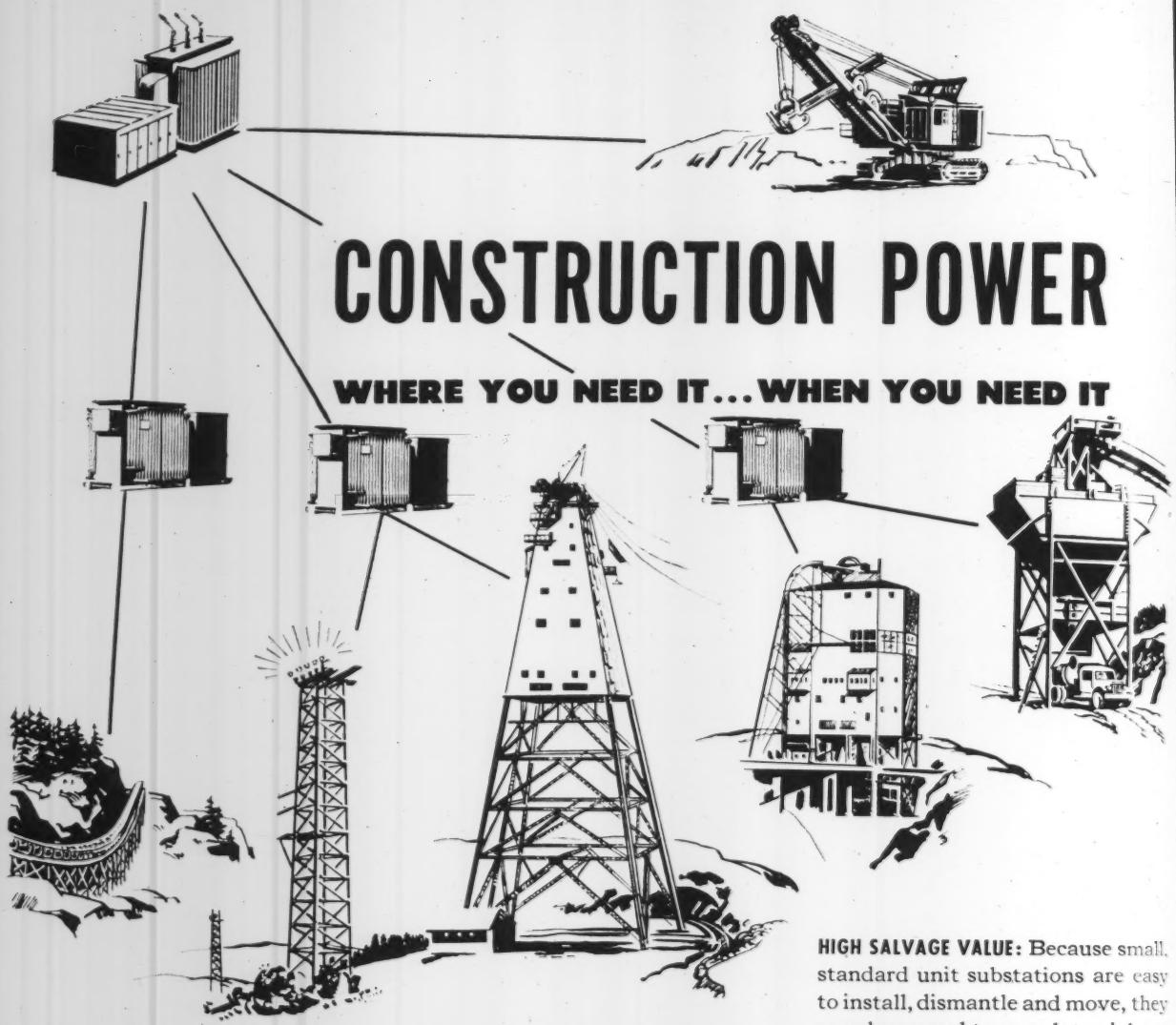

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News of the Week

ENGINEERING NEWS-RECORD • SEPTEMBER 11, 1947 • VOLUME 139 • NUMBER 11

Biggest army research study started by engineer corps

Program to cost $1 million activated to aid huge construction schedule, provide data for industry—Many phases to be covered in Civil Works Division study

An investigation and research program of much greater scope than any they have yet carried out was started this month by the Civil Works Division of the Corps of Engineers.

A total of $1,000,000 of work is planned, with many of the studies expected to be of value to other agencies and private industry.

The Army engineers received appropriations of $393,000,000 during the last session of congress for rivers and harbors and flood control projects. They are launching large construction programs in almost every state and many special problems must be met, which require this research.

In the past, considerable research work has been done by the corps to advance specific projects. To make this year's investigations more effective for present and future programs, all such work will be coordinated as a single program.

Big wave tank planned

About $500,000 of work pertaining to structural problems is planned. Of this, $200,000 will be spent to build the largest wave tank in the United States, if not in the world, in Washington, D. C., under supervision of the Beach Erosion Board. It will be about 550 ft. long, 20 ft. wide, and 15 ft. deep. At one end a wave machine capable of producing waves 6 ft. high as measured from the trough to the crest will be installed, to permit testing various types of slope protection for embankments, channel protection, breakwaters, and other marine structures.

Another $150,000 will be spent to construct and test to failure a full-scale floodwall of the type used so extensively along the Ohio. The proposal is to construct sections of a concrete T-type wall with a maximum height of 25 ft. above ground and to load them to destruction by applying hydrostatic pressure on the river face.

At Norfork Dam structural engineers will continue tests on a 6x10-ft. vertical lift slide gate under a head of about 175 ft. This $67,000 study supplements small-scale model tests at the U. S. Waterways Experiment Station, Vicksburg, Miss., and results are expected to affect the basic slide gate design for the several concrete dams now under construction.

Another $150,000 will be spent to test a 5½x11-ft. vertical lift gate of the roller train-type and a tainter gate of similar size in a spare penstock of a high dam.

The Rock Island District plans to extend a study of various types of paint to protect lock and dam structures on the Mississippi. This work will supplement similar test programs by other districts to reduce maintenance costs with river structures.

In cooperation with the Military Construction Division of the corps, a paint containing spherical grains of glass will be tested as to its value as an armor coat for piling and other underwater timber construction.

Review stress data

Still another project of the structural division calls for a review and analysis of all previously obtained data regarding stress, uplift and foundation deformations affecting concrete structures, particularly concrete dams.

Investigations pertaining to soil mechanics are to cost over $200,000 and

(*Continued on page 6*)

Alaska railway work costs $34 million

Details of a $34,000,000 rehabilitation and construction program now being undertaken on a three to five year schedule on the Alaskan Railroad were disclosed last week.

The government-owned railroad, operated by the Department of the Interior, now has $15,000,000 in funds available for contractual obligation in 1948, according to L. A. Moore, public relations director.

In general, rehabilitation and reconstruction encompass track and roadbed replacement; flood control, drainage, curvature corrections, timber treatment and other roadbed improvements; new buildings; and new steel bridge construction. Also to be included are additional warehouses, terminal improvements at Anchorage and Fairbanks, expansion of the Anchorage freighthouse, and construction of new shops and maintenance buildings for repairs to rolling stock.

Built in 1915, the line was never brought up to standard by subsequent construction, never properly ballasted or subgraded, and its ties were untreated native timber. Operating the year round in Alaskan weather with ice erosion and similar handicaps, the road has averaged $4,000 per mile per year in maintenance costs, according to official figures.

New work will be done by outside contractors, since the road does not have the equipment, personnel and shops to do the work itself. Also to be acquired is a total of 1,500 units of power and rolling stock, and contracts have been let for conversion of troop sleepers and kitchen cars used during the war to box cars and refrigeration cars.

Replacement of timber bridges will begin in the current season, with two boatloads of bridge steel leaving Seattle this week for Seward. Communications improvements are also scheduled as is the construction of accommodations for personnel.

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Highways—The Delaware River Joint Commission has approved setting aside $3,000,000 to widen the roadway of the *Philadelphia-Camden* bridge from six to eight traffic lanes. . . . The *Nebraska* Department of Roads and Irrigation said it was facing a "severe shortage" of engineering assistants when 60 student-employees resigned to re-enter school this fall. . . . Tentative allocations for construction of primary highways in the 1948-49 fiscal year for *Virginia* will total $20,000,000. . . . More than 500 *Indiana* state highway employees are now qualified to give first aid treatment, according to an announcement by the State Highway Commission. The training program was inaugurated in 1946.

Construction—Work is scheduled to start November 1 on a 15-story, $3,000,000 office building in downtown *Dallas, Texas*, to be known as the Mercantile Securities Building. . . . The Chesapeake and Potomac Telephone Co. of Baltimore, Md., authorized expenditures of $2,212,000 for new construction of telephone facilities in *Maryland*, to bring total construction this year to $27,544,000. . . . The St. Regis Paper Co. has announced plans for construction of a $6,000,000 kraft paper mill and multiwall bag plant at *Tacoma, Wash.* . . . Ground has been broken at the *Buffalo, N. Y.*, plant of E. I. du Pont de Nemours & Co. for a $2,000,000 research laboratory, the first unit in a projected expansion program. . . . The Westinghouse Electric Co. will erect a $2,000,000 plant on a 22-acre site at the northeast corner of South Cicero Ave. and West 41st St. to house its manufacturing and repair divisions for the *Chicago, Ill.*, area. . . . The Calgary Exhibition & Stampede Ltd. of *Calgary, Alberta, Canada*, will start work immediately on a $750,000 concrete and steel building to seat 9,000 spectators for hockey games and outdoor exhibitions.

Housing—The Rutland Development Co. of *Philadelphia, Pa.*, has started construction of 252 dwellings to cost more than $2,500,000. . . . Work has started on a 156-unit, $1,200,000 apartment project for the Cherokee Gardens Co. at *Birmingham, Ala.* . . . Fairlamb Construction Corp., Upper Darby, Pa., has started work on a 356-residence project in *Philadelphia*. . . . The second largest rental housing project to be built in New Jersey by private interests was announced by the Roth-Schenker Corp., which said it will begin work on a 666-family development in *East Paterson*. The apartments will cost more than $6,250,000. . . . The Tyson Construction Co. of Upper Darby, Pa., has started work on a 200 residence project at Woodmere Park, in *Delaware County*, to cost $2,000,000.

Miscellany—The number of apprentices in the building trade has increased by 26 percent since the beginning of the year, according to the U. S. Department of Labor. . . . Construction of a new 127-mile pipe line from South Portland to *Hallowell* and *Bangor, Maine*, will be started next year by the Socony-Vacuum Oil Company. . . . Voters of *Harris County* (Houston, Texas, approved a $2,500,000 Navigation District bond issue for an expansion program for the Houston Ship Channel and Port Houston.

THE COVER PICTURE

To be sure that there will be no unequal settlement of the fills that are to carry New Jersey's new "dual-dual" highway across the tidal flats adjoining Arthur Kill, the State Highway Department is using 20-in. hydraulic dredges to remove unstable material. The dredge cut shown in the cover picture is 4,000 ft. long, 265 ft. wide and averages 13 ft. deep to firm material. In the foreground, trucks and bulldozers are building up the subgrade for the 8-lane highway, which will have a central 4-line divided highway for high-speed traffic, which in turn is separated from 2-lane highways on each side for local traffic (*ENR* Jan. 23, vol. p. 120). Chas. M. Noble is state highway engineer and the grading contractor for this section near Woodbridge, N. J., is S. J. Grove & Sons Co.

The section of this highway between Elizabeth and Newark was opened for traffic August 28.

W. E. Wickenden dies, was Case Institute head

William E. Wickenden, 64, who retired Aug. 31 as president of the Case Institute of Technology in Cleveland, died Sept. 1 while vacationing at Jaffrey, N. H. His retirement had become effective only a few hours before his death.

W. E. Wickenden

A native of Toledo, Ohio, Dr. Wickenden held degrees from Denison University and the University of Wisconsin, and taught both at Wisconsin and at the Massachusetts Institute of Technology before joining the staff of the American Telephone and Telegraph Co. as an engineer. He eventually became assistant vice-president of the company.

In 1923, Dr. Wickenden became director of the Society for the Promotion of Engineering Education, and in 1930 he was inaugurated as the third president of Case—which was known until last July as the Case School of Applied Science.

In 1941, he was appointed general products priority executive for the Office of Production Management, and only recently he was named representative of the Engineers' Joint Council on the United Nations Educational, Scientific and Cultural Organization.

Drainage research starts

A research project to study and develop new and improved drainage methods for Utah's irrigated lands has been announced by Franklin S. Harris, president of the Utah State Agricultural College.

ENGINEERING NEWS-RECORD. Published every Thursday. Publication office: 99-129 North Broadway, Albany 1, N. Y. Return postage guaranteed. Editorial and Executive Office: 330 West 42nd St., New York 18. Vol. 139, No. 11. Price 35c per copy. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 99-129 N. Broadway, Albany 1, N. Y.; or 330 W. 42nd Street, New York 18, N. Y. Subscriptions, United States and U. S. Possessions, $6.00 for one year, $9.00 for two years, $12.00 for three years. Canada $7.00 for one year, $11.00 for two years, $14.00 for three years. Latin American countries $10.00 for one year, $16.00 for two years, $20.00 for three years. All other countries, $20.00 for one year, $30.00 for two years, $40.00 for three years. Please indicate position and company connection on all subscription orders. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in the U.S.A. Cable Address: "McGraw-Hill New York." Member A.B.P. Member A.B.C. Copyright 1947 by McGraw-Hill Publishing Company, Inc. All rights reserved. JAMES H. McGRAW, Founder and Honorary Chairman; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Director of Advertising; EUGENE DUFFIELD, Editorial Assistant to the President; and J. E. BLACKBURN, JR., Director of Circulation. District Managers and Branch Offices: Fred G. Hudson and L. H. Hunt, 520 N. Michigan Ave., Chicago 11; 738-39 Oliver Building, Pittsburgh; J. W. Otterson, 68 Post St., San Francisco 4; Aldwych House, London, W. C. 2, England; Washington; J. M. Spackman, New York; A. B. Cossens, Philadelphia; E. E. Duff, Jr., Cleveland; B. F. Horn, Detroit; W. E. Donnell, St. Louis; R. N. Phelan, Los Angeles; W. G. Payne, Boston; Ralph Maultsby, Atlanta, Ga.

Garrison Dam bids far below estimate

Bids opened by the U. S. Corps of Engineers, Garrison District, Bismarck, N. D., Sept. 5 for the first stage of construction at Garrison Dam on the Missouri River reverse the trend of the past few years in that three out of eight proposals are below the engineer's estimate.

A combination of H. N. Rodgers & Sons and S. K. Jones of Memphis and Forcum-James Co., Dyersburg, Tenn., bid $6,350,000 for Sched. A. and $6,258,000 for Sched. B., while the engineers estimate for the two proposals was $7,919,000 and $7,727,000, respectively.

Description of the work to be done under the first contract was published in *ENR* Aug. 14, 1947; vol. p. 217. Since this article was published, specifications have been revised somewhat increasing some of the quantities and extending the length of time for placing the embankment. In brief, the work consists of: Excavation of two foundation pits for power house and intake tower foundations, 9,625,000 cu.yd.; placement of 11,055,000 cu.yd. of rolled fill in extreme west end of main dam embankment, of which 1,430,000 cu.yd. will come from excavation of part of the intake channel ¾ mi. north of the dam; driving 286,400 lin. ft. steel sheet piling, all but 31,000 ft. to be furnished by the government; salvaging and stockpiling 390,000 cu.yd. of lignite from the excavation; driving a 7x9-ft. timbered access tunnel 250 ft. long and a 300-ft. test tunnel 37 ft. dia. for study of the best type of lining for the seven intake tunnels to be driven later.

Schedule A calls for cutting a pilot drainage ditch (400,000 cu.yd.) along the proposed outlet channel from the power house site to the river, which would cut down the pumping head in the excavation. Schedule B eliminates the pilot drain in favor of full-head pumping. The test tunnel must be finished in 210 days; time for embankment placing has been extended to 785 days.

Other bids for Sched. A were received as follows, from combinations headed by: United Const. Co., Winona, Minn., $7,592,000; Western Contr. Co., Sioux City, Ia., $7,710,000; Lytle & Groves, Sioux City, Ia., $7,953,000; Mittry Bros. Const. Co., Los Angeles, $8,774,000; Morrison-Knudsen Co., Inc., Boise, $9,377,000; Guy F. Atkinson, San Francisco, $9,880,000; Geo. M. Brewster & Sons, Bogota, N. J., $11,509,000.

Garrison Dam is one of the key structures of the Pick-Sloane Plan for development of the Missouri River. It will be built under the direction of Brig. Gen. Lewis A. Pick, Division Engineer at Omaha, and Col. John S. Seybold, District Engineer at Garrison. Eventually the dam will contain 75,000,000 cu.yd. of rolled fill.

Award 3,000 reclamation jobs in 1947

More than 3,000 contracts, totaling over $125,000,000, were awarded to contractors, construction material suppliers and equipment manufacturers by the Bureau of Reclamation during the fiscal year 1947, according to Commissioner Michael W. Straus.

The largest single reclamation contract for the year—one for $9,359,011—went to the C. F. Lytle Co., of Sioux City, Iowa, the Green Construction Co. of Des Moines, Iowa, and Amis Construction Co. of Sioux City for construction of Potholes Dam on the Columbia Basin project in Washington. About 12 miles east of the town of Ephrata, Wash., Potholes Dam will be the fourth longest in the United States, measuring 19,000 ft. at the top.

Second largest contract, totaling $5,888,695, was awarded to a group consisting of three corporations and an individual: Stolte, Inc., United Concrete Pipe Corp., Duncanson-Harrelson Co., and Ralph A. Bell, of Oakland, Calif., for construction of the Tracy pumping plant and discharge lines on the Central Valley project in California.

The two largest equipment contracts awarded total $5,479,780, and cover three generating units for the Grand Coulee power plant.

Other major contracts let during the year cover:

Electrical equipment for Delta and Elverta substations, Central Valley project; motors for Grand Coulee pumping plant; turbines for Davis power plant; construction of the Granby pumping plant on the Colorado-Big Thompson project; Enders Dam in Nebraska; Marys Lake and Estes power plants on the Colorado-Big Thompson project and a 12.3 mile section of the East Low Canal, Columbia Basin project.

Mr. Straus said that the bureau plans to award 99 major construction contracts with a total value of $118,000,000 during the now current fiscal year of 1948.

Authorize power project for Owens River, Calif.

The Los Angeles Board of Water and Power Commissioners has authorized a $40,500,000 development of hydroelectric power resources along the Owens River Gorge.

Three power plants will be built in the project, one below the other, to utilize a 2,375-ft. drop from Crowley Lake to the end of the gorge near Bircham's Canyon. A 250-mi. transmission line will be constructed from the gorge to a San Fernando valley receiving station.

Of the total estimated cost, $4,250,000 already has been spent on Long Valley Dam, intake structures and 6,576 ft. of tunnel. The program will involve raising the dam by 20 ft., increasing water storage capacity of Crowley Lake from 183,000 to 315,000 acre ft. Approximately 58,000 ft. of concrete-lined tunnel, including the 6,576 already completed, will be built to deliver water from Crowley Lake to the three power plants.

Award $13 million Boysen Dam contract

Contract total is one of biggest let by Reclamation Bureau in past two years

The Bureau of Reclamation last week announced the award of a $13,900,000 contract to the Morrison-Knudsen Co., Bois, Idaho, for construction of Boysen Dam on the Big Horn River in north-central Wyoming.

The contract calls for construction of the main structure of earth-fill dam, a power plant with an eventual installed capacity of 10,000 kw., and for relocation of trackage of the Chicago, Burlington and Quincy Railroad in the area.

The award makes Boysen the first reclamation job to go forward under President Truman's 1948 fiscal year program to expedite Missouri River Basin flood control.

Boysen dam will be 150 ft. high and 1,100 ft. long at crest, and will provide 820,000 ac. ft. of potential storage capacity for power production, silt control, irrigation and flood control.

The structure will be located in the Wind River Canyon, about 16 miles south of Thermopolis, Wyo., in a precipitous, rock-walled canyon cut through mountain ranges by the Big Horn River. Originally planned as one of the initial units of the Missouri River development plan, estimated total over-all cost of the job was set in 1945 at about $8,202,000.

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Philippines push extensive highway building program—Argentine "5-year-plan" reported bogging down—Major hydro work reported in Austria, Russia—Other foreign news

Philippine Republic—Despite a serious lack of equipment and trained personnel, work is going ahead steadily on $9,960,000 of highway construction work under supervision of a special division office of the Public Roads Administration (*ENR* April 10, vol.p.551).

About $12,000,000 of additional U. S.-supervised work is being prepared for next year.

Some 30 miles of highways in the Manila area have already received a dust palliative bituminous surfacing by forces of the city government, and two multi-lane concrete paving jobs are in progress in the city as is one large bridge project.

Plans have been completed, and bids asked on one other paving project and two additional bridges that will cost a total of about $1,250,000. Other plans are being prepared for 18 bridge projects one paving project and two jobs involving reconstruction of Manila streets—all major work. These jobs are expected to be advertised before the end of this year.

The preparation of plans preliminary to advertising for bids has been slow, due to the loss of trained personnel during the war, and to salary scales authorized, which are low in comparison with salaries offered by private industry. This difficulty is being overcome in part by PRA assuming responsibility both in Washington and in the Philippine division office for the preparation of plans for a large number of major bridges and several paving projects.

The Bureau of Public Works and most Filipino contractors lost practically all their construction equipment during the Japanese occupation, and contractors have been unable to replace lost items by purchase. Arrangements were made for the government to receive surplus equipment from the U. S. Army, but the results have been disappointing. Little of the equipment is suitable for the rehabilitation program, and most of the items received are in poor mechanical condition. Dealers have been unable to accumulate sufficient spare parts to recondition this machinery.

To overcome this difficulty, PRA is purchasing in the U. S. such basic items as a paver and an asphalt mixing plant for delivery in Manila at the earliest possible date. This equipment will be made available to contractors at agreed rental rates.

A limited amount of reinforcing steel also has been purchased by PRA. In addition, equipment for a materials testing laboratory is being purchased and will be installed in Manila for control purposes. A rock quarry and a gravel pit, previously operated by the U. S. Army, have been transferred to the Philippine government.

Arrangements have also been made with the Philippine government to accept bids from American contractors on the same basis as those submitted by local men, according to F. C. Turner, division engineer for PRA.

Planning....

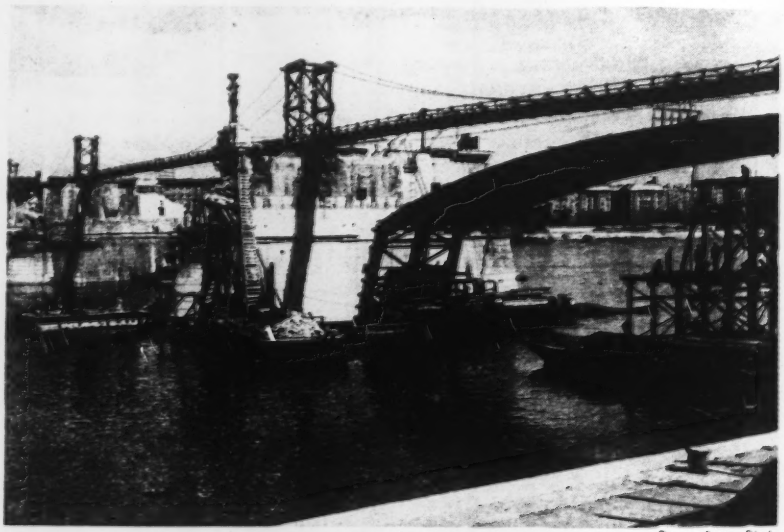
Argentina—Much that has been written, both locally and abroad, concerning the Peron Five-Year plan now seems to have been overly enthusiastic and premature, observers report.

The plan is an important one for Argentina, and is generally well-grounded in its aims, but it is becoming increasingly apparent that many of its phases are beyond the present resources of the nation and many others will require considerably more than five years to effect.

Public statements named the first big project to get under way under the plan as a hydro-electric power program—a logical step since the country is short of power, has no coal of importance of its own. But, the much-heralded "Salta Grande" hydro project on the Parana River between Argentina and Uruguay—the first job scheduled for construction—is still in the blue print stage, and no one is ready to set a date for pouring concrete. Everything about the project seems to be still in the air.

The 50 U. S. engineers brought down by Gen. Royal Lord, President Peron's American advisor, are said to be working in Buenos Aires drawing plans for tentative projects. The liaison between this group and the regular government departments is, however, described as "loose".

A two-nation study commission appointed by the Argentine and Uruguayan governments to settle international arrangements regarding the Salta



Press Assn. Photo

***Repair Hungarian Bridge**—The famed Margaret Bridge, a stone spandrel-arch structure built in 1876 to span the Danube at Budapest, is now under reconstruction, after being usable only as a footbridge since its destruction by retreating German forces more than two years ago. The six 82-meter stone arches that originally made up the structure are being replaced with steel*

Grande project has not come to any final agreements, and until this is done, there is no possibility for any of the planned construction to be started.

The only big project to get under way is the proposed natural gas line from Commodor Rivadavia in southern Argentina—to Buenos Aires. So far, digging of ditches is said to be under way, but no explanation has been advanced as to where such a great amount of pipe will be secured, or how the project will be financed.

However, private building is greatly accelerated in Buenos Aires, with construction generally restricted to reinforced-concrete structures. Work is also under way on a new national airport some distance from the Capital, but planes are still forced to use the overcrowded and inadequate Moron airport.

Hydro projects....

Austria—The Austrian ministry of Agriculture and Forestry, which has control over all national water rights, said last week that work had started on construction of a power plant at Ybbs-Persenbeug on the Danube River. It is estimated that the plant will supply an average of one billion kilowatt hours yearly, and can be built at an approximate cost of $20,000,000.

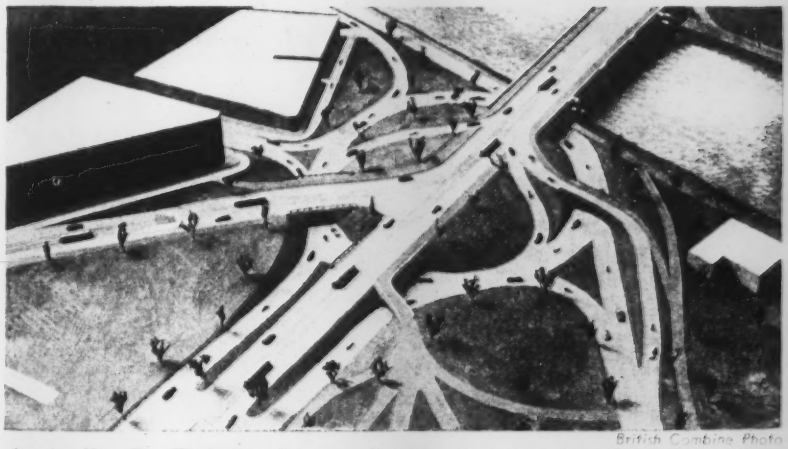
Detailed plans for construction of a power plant at this site were approved in 1936, but the work was abandoned in 1938 when Germany assumed control of the country. The plan was revived in 1945.

The project envisages a water level higher by 1.50 meters than previously planned. A preliminary survey of water rights was completed a year ago, and approval of the higher water level and the basic survey for the main plant is expected soon.

Russia—Russian authorities last week revealed that work had started on plans and actual construction of two major hydro-electric schemes. Largest single project is a dam near the village of Mingechaur, on the Kura River, in Transcaucasia, where construction workers have started work on what will be one of the highest dams in Europe.

The dam itself will be earth fill, 250 ft. high, 1,640 ft. wide and 5,000 ft. long, to create a lake with a surface area of some 234 square miles.

In the planning stage is a series of 14 hydroelectric stations in the Caucasian Mountains to exploit the rapid waters of the Terek River on its way to the Caspian Sea. The first of the series of dams is already under construction.



British Combine Photo

***Australian Traffic Interchange**—Utilizing a natural slope from the southern end of the Princess Bridge over the Yarra River—Melbourne's No. 1 traffic bottleneck, City Engineer P. S. Robinson and his staff designed a "roundabout" shown in the model to carry all traffic entering or leaving the city above an intricate system of intersections on the south bank of the river. By incorporating the natural features, the plan is said to require a minimum of earth moving, and will cost about $500,000.*

Belgium—The Belgian government has now under consideration a vast investment plan calling for investment of more than $4,000,000,000 for industrial rehabilitation.

Features of the plan include the proposed expenditure of $320,000,000 to modernize or replace all power plants built before 1920, and $356,000,000 for modernization of coal industry establishments.

Ports and Harbors....

Japan—Redevelopment of Japan's greatest port—Osaka—is now under way with the inauguration of a comprehensive program approved by the city government.

Chief aim of the project is to increase the cargo handling capacity of the port from 2,500,000 tons to 30,000,000 tons annually. With 90 percent of port facilities wiped out by wartime bombing, engineers have the unique opportunity of virtually rebuilding the port to suit modern needs. Facilities are to be extended up the three rivers that flow through the city to bring unloading operations nearer industrial establishments.

Water, sewers....

Puerto Rico—The Puerto Rico Aqueduct and Sewer Service, which controls practically all the water supply and sewer services in the island, will carry out a construction program involving the expenditure of about $21,500,000 during the next two years, according to a report submitted to the board of governors by Sergio Cuevas, executive secretary.

About 100 water systems are needed for rural areas, to cost an estimated $6,000,000, and sewers will require the expenditure of about $7,500,000, the report said.

New engineer....

Puerto Rico—Col. Jorge J. Jimenez, a Puerto Rican engineer who served with the U. S. army in Europe and the Pacific, has been named Commissioner of the Interior for the Island. A native of Puerto Rico, he received his engineering degree at Michigan State College, and returned to his homeland to specialize in water supply and water conservation work.

Contest....

Dominican Republic—American engineers and architects have been invited to submit complete drawings, plans and specifications for the construction of a Roman Catholic Basilica, to be erected in the town of Higuey under Dominican government sponsorship.

The structure is to be erected on a large, isolated site, is expected to accommodate 3,000 persons, and will cost about $600,000. A $2,000 cash prize has been set up for the originator of the best plan submitted.

Information may be obtained and entries submitted to the Dominican Embassy, 4500 16th Street, N. W., Washington, D. C., before Nov. 5, 1947.

Plan big Army engineer research job

(*Continued from page 1*)

much comprehensive work is being started.

An outstanding project to be completed is that dealing with the performance of the slope protection of earth dams. Last year a survey of the protection of representative dams throughout the country (including private structures) was conducted. This year the survey will be extended to include the slopes of flood channels and levees.

Pressures in soil masses will also be studied, with the development of improved cells to measure pressure. A closely related assignment calls for the improvement of equipment to measure the shearing strength of soils. This latter work will continue a project started several years ago in cooperation with Harvard University and Massachusetts Institute of Technology.

Development of improved devices for measuring strain in earth structures is also planned.

During the past few years the engineers have installed relief wells on the downstream slope of Sardis and Fort Peck Dams and other structures to reduce uplifts (*ENR* Aug. 21, 1947, vol. p. 246). The corps is now extending the use of these wells.

To prevent seepage through and under earth dams and levees, the army men have used conventional trenching machines to construct a cutoff trench about 20 ft. deep on the river side of the structure and to backfill the trench with puddled clay (*ENR* June 27, 1946. vol. p. 986). Now this work is being extended to develop equipment and procedure to construct cutoffs as deep as 40 ft. As an alternate and possibly more economical method of controlling seepage, the corps is starting a $50,000 project planned at using conventional equipment to construct a pervious trench drain as deep as 20 ft. along the landside of earth fills.

Concrete studies begun

Although not expected to cost as much as other parts of the program, the work on concrete is expected to provide data of interest to the entire construction industry. One investigation is a general research study to evaluate the benefits and shortcomings of new admixtures for concrete, the limitations on the manufacturing and placing of concrete when admixtures are used, and added work on the blending of various types of cement. Investigations on the use of slag as an aggregate will be extended, as will the effect of the gradation of sand in mass concrete construction.

Closely related to this general program will be a project to develop a better technique for using most effectively air-entraining admixtures in mass concrete. This study will include evaluation of the effect the size of sand on the amount of air entrained, and loss of air in vibrating in place.

Another project calls for the listing of acceptable sources throughout the country of both fine and coarse aggregate for flood control and river and harbor construction.

Considerable work to extend the benefits of the vacuum curing of concrete is also scheduled.

At the Waterways Experiment Station numerous concrete pipe sections produced by various commercial organizations and of different types and sizes will be tested, preparatory to the writing of more rigid specifications.

Much hydraulic work

About $230,000 of hydraulic work is planned—half of this amount to be spent in building and testing models incorporating proposed changes to improve the design of spillway crests, control gates, spillway buckets, stilling basins, conduit entrances, and sluice gate slots.

The possible use of air in place of water in the testing of certain types of hydraulic models is to be investigated, as are the filling and emptying characteristics of high-lift locks and the operating forces on miter type lock gates.

Simulation of air-entrainment in models involving high-velocity flow will also be studied as part of the hydraulic program. Other hydraulic studies will deal with the stability of breakwaters of rubble construction exposed to severe wave action; determining the rate of pitting of concrete surfaces under various degrees of cavatation; and the effect of model distortion on velocity.

The principal project of the hydrologic section is a $50,000 study planned as part of a long-range program to develop reliable procedures for determining freeboard requirements for dams, insofar as they are governed by wave action, and by wind "setup"—the piling up of water in front of dams by winds. Observations of wave characteristics and related meteorological phenomena will be made on selected inland reservoirs to determine the governing effects on wave action of the following factors: wind velocities and duration, fetch or length of open reservoir adjacent to the dam, configuration of shoreline, topography of the reservoir bottom, and the sheltering action of trees and topography adjacent to the reservoir.

All the work described will be done under the general supervision of Col. Peter A. Feringa, assistant chief of engineers for civil works, and Ray W. Stuck, who recently rejoined the corps as chief of the engineering division.

Ask government to pay for dam road building

At the January session of Congress a bill will be offered providing that the federal government bear the costs of widening roadways and added construction necessitated by construction of dams by the U. S. Corps of Engineers.

R. H. Baldock, Oregon state highway engineer, has prepared the legislation, which the executive committee of the American Association of State Highway Officials, of which he is a member, will have introduced.

Under present laws the Army Engineers are authorized to replace roads that are made unusuable by the construction of a dam, but the state has been required to pay all additional costs incidental to the construction.

The bill provides that the dam authority pay the entire cost of road building necessitated by the dam construction beyond what the state or county would have spent to replace the road in its present location.

A. C. Leonard named PRA roads section head

A. C. Leonard of Rochester, Minn., for the past 19 years highway engineer for Olmsted County, Minn., has been named chief, secondary roads division, Public Roads Administration.

Mr. Leonard will have staff responsibility for activities connected with the federal-aid secondary road program, under the general supervision of Public Roads Deputy Commissioner H. E. Hilts, whose office has performed these duties in the past.

As Olmsted County highway engineer, Mr. Leonard has had broad experience in all phases of secondary-road design, planning, construction and maintenance, and in the administration of county road programs. A native of Watertown, S. D., Mr. Leonard is a civil engineering graduate of the University of Minnesota and for five years prior to 1928 was employed as assistant engineer in the Minnesota state highway department.

Design revisions fail to halt hospital work

Construction proceeding on 9 veterans' hospitals; bids to be asked soon on 15 jobs

Despite the need for restudy of a substantial number of plans for veterans hospitals to reduce costs (*ENR* Aug. 14, vol. p. 232), work will go ahead rapidly on the nine hospitals for which some construction contracts have been awarded by the Army Engineers and bids will be taken soon on 15 more.

The former will provide about 4,000 beds for general medical and surgical patients, and 2,000 beds for veterans suffering from mental disorders. These nine hospitals and their sizes are as follows: Peekskill, N. Y., 1,984 beds; Providence, R. I., 400; Minot, N. D., 150; Sioux Falls, S. D., 300; Grand Junction, Colo., 150; Buffalo, N. Y., 1,000; Albany, N. Y., 1,000; Brooklyn, N. Y., 1,000; and Fresno, Calif., 250.

A $5,645,700 contract was awarded Aug. 11 for the Fresno work to the James I. Barnes Construction Co., Santa Monica, Calif.

The Buffalo hospital will be advertised Oct. 1, and the Albany work will be advertised on Nov. 1. A $14,700,000 contract for the Ft. Hamilton Hospital in Brooklyn, N. Y., has just been let.

Most of the major changes to reduce costs in accordance with General Bradley's instructions will be made in from 30 to 40 of the 62 additional hospitals the Army Engineers are expected to build for the Veterans Administration. For these 62 projects, about $536,000,000 has been earmarked and the floor space of this group of hospitals is limited to 24,000,000 sq. ft.

To advertise 15 projects

For 15 of these 62 jobs, plans are well advanced and the Army Engineers hope to advertise for bids for construction in about 45 days. The location and the size of these 15 hospitals are as follows: Omaha, Neb., 500; Wilkes Barre, Pa., 476; Fort Wayne, Ind., 200; Wilmington, Del, 300; Altoona, Pa., 200; Erie, Pa., 200; Shreveport, La., 450; Newark, N. J., 1,000; Grand Island, Neb., 200; Little Rock, Ark., 500; Poplar Bluff, Mo., 200; Big Springs, Tex., 250; Beckley, W. Va., 200; Iron Mountain, Mich, 250; and Clarksburg, W. Va., 200.

Changes that are to be made in these hospitals are not expected to reduce the facilities for medical care. Each hospital will contain an adequate number of operating rooms and laboratories. Eliminated will be such auxiliary facilities as auditoriums and theaters.

NON-FLYING ENGINEER DIRECTS AVIATION IN OREGON

W. M. Bartlett, 57, who never flew an airplane but is going to learn has become director of Oregon aviation.

Mr. Bartlett has been associated with aviation as an engineer, assisting in laying out and building a number of airfields in the state. When Leo Devaney resigned as director of the Oregon state board of aeronautics, Gov. Earl Snell appointed Bartlett to fill the vacancy.

Mr. Bartlett attended Willamette University and obtained his degree in mining engineering at Oregon State College in 1921. His education was interrupted by military service in World War I, with the 162nd infantry. After graduation he engaged in business and private practice until the thirties, when he became state engineer for the WPA.

During World War II he was an engineer with the Kaiser organization. Later he became consultng engineer to the Oregon State Highway Commission.

Exploratory work starts for Glen Canyon Dam

The Los Angeles, Calif., Board of Water and Power Commissioners last week allocated $60,000 for exploratory work on the Glen Canyon dam site, matching short Reclamation Bureau funds to save at least a year's time in preliminary engineering work on the project.

Congressional cuts in bureau appropriations made work on the site impossible without the cooperation of the utility, the board explained.

Studies have been in progress for some years on construction of power dams in Bridge Canyon, 113 miles above Hoover Dam on the Colorado River, and at Glen Canyon, another 250 river miles up the stream. The Bridge dam site has been determined by drilling but a site tentatively selected at Glen was found unsatisfactory, necessitating further exploratory work.

"Los Angeles will need large additional blocks of hydro-electrical energy from the Colorado," Chief Electrical Engineer Charles P. Garman said. "By joining with the Bureau of Reclamation in exploratory work at Glen Canyon, we will save at least a year's time in the preliminary engineering requisite for the ultimate development. Because of limitation in water storage facilities at Bridge Canyon, development of both this and the Glen Canyon site is needed for full power production."

The combined Bridge and Glen Projects when completed will produce twice the energy developed by Hoover Dam, it is estimated.

California road bureau streamlined for new work

The California division of highways has been reorganized to assign several of the top engineers additional authority and responsibility in a move to expedite handling an expanded highway program recently approved by the state legislature. (*ENR* July 10, vol. p. 21).

Some $70,000,000 a year additional funds will be available for construction under the program.

Under the new set-up, four assistant state highway engineers have been appointed in the Sacramento headquarters office and one each in the Los Angeles and San Francisco district, where the greatest volume of work will be done. As far as possible under current laws, the appointees will be delegated with the power and authority of the state highway engineer, George C. McCoy.

Fred J. Grumm, previously the only assistant highway engineer, takes the title of deputy in the reorganization.

Start flood control dam at Mt. Morris, N. Y.

The recent passage of War Department's civil functions appropriations bill will enable the U. S. Engineers to begin construction on the $13,000,000 flood-control dam at Mt. Morris, N. Y., according to Col. Herbert D. Vogel, Buffalo district engineer. The bill carried an appropriation of $2,000,000 for the dam.

A cofferdam consisting of 1,350 ft. of sheet steel piling in the forms of cells, or gigantic chambers, will be driven into the bed of the river. The cofferdam will constitute a walled-off area with one dimension the thickness of the dam and the other half the width of the river. The area will then be pumped dry and material dredged from the river bed within the area will be used to fill the cofferdam cells. The foundation will be laid in 50-ft. sections on the bed rock of the river.

Chesapeake Bay bridge engineering contract let

The first contract for engineering work on a bridge across Chesapeake Bay to connect Baltimore with the eastern shore of Maryland was awarded recently to the J. M. Greiner Co. of Baltimore.

In announcing the award, Governor W. Preston Lane of Maryland said that bids for the actual construction of the $30,000,000 crossing will be sought "shortly after the first of the year".

HIGHLIGHTS OF MUNICIPAL DEVELOPMENTS

Summarizing current activities in city engineering and construction throughout the country.

San Diego creates public works board—Boston Transit Authority takes over elevated railway system—Tampa Bay causeway work to start this year—Prosecute city officials for stream pollution

In a move expected to result the saving of $191,000 during the remainder of the fiscal year, San Diego County, Calif., supervisors last week had ordered consolidation of 12 departments and agencies into a department of public works.

Consolidated under the new department as of Oct. 1 will be the existing postwar projects agency, property, courthouse, grounds, garage, parks, operations center, telephone, building inspector and aviation and airports departments, and the sanitation districts of the county. The new department will consist of some seven divisions to supervise these varied activities.

A complete construction and maintenance division, with sufficient foremen to insure proper supervision of projects will be established.

Heading the new department will be a director, whose salary has been tentatively set in the range between $679 and $825 per month.

Stream-clearing action

Evidence that state and city officials are going to greater lengths to put teeth into anti stream-pollution legislation piled up during the week.

In Massachusetts, the state brought contempt proceedings against the city of Taunton and five of its nine municipal councillors for failure to keep an alleged promise to remedy sewage pollution of the Taunton River. According to attorneys for the state, Taunton and three local industries were cited more than a year ago for polluting river water, and city officials and manufacturers agreed to remedy the situation. The state charged that while the industries have complied, the Taunton council has failed to carry out any of the work that is required to end the pollution from other sources.

In Pennsylvania, Governor James H. Duff announced a "get tough" policy of enforcement in the state's drive to clear its streams of pollution, and added that a special prosecutor had been appointed to handle cases of violation or failure to comply with orders of the State Sanitary Water Board.

The city of Trenton, N. J., filed suit in Chancery Court to prevent the neighboring township of Ewing from allowing excess sewage to drain into the Delaware River a short distance upstream from the intake to the city's water supply. By previous agreement, the city was to take all the Ewing sewage its 24-in. trunk line sewers could accommodate, but attorneys claimed that excessive waste from an industrial plant in Ewing now produces more sewage than Trenton mains can handle. Township officials, in the midst of planning for a joint treatment plant with the adjoining township of Lawrence, branded the action as unwarranted.

Wilmington, Del., Regional Planning Commissioners announced the appointment of a committee to carry out a new drainage control policy that regulates lot sizes in suburban areas to prevent saturation of subsoil from septic tank drainage.

Akron, Ohio, city councilman considered placing the question of a 2-mill sewer levy on the November special election ballot to finance sewage disposal works; and the General Electric Co. awarded a contract to DeWitt C. Griffin and Associates, of Seattle, Wash., for design of new facilities for water and sewage for expansion of the town of Richland and a construction camp to house up to 20,000 workers and their families, in connection with expansion of the Hanford Engineer Works.

Tampa Bay causeway

Officials of the St. Petersburg Port Authority said last week that work on the projected 11-mile bridge-causeway across lower Tampa Bay will get under way this year, after city voters approved a $5,000,000 extension of the authority's debt limit.

As a result of a recent election, the authority may now incur up to $15,000,000 of debt.

In the planning stage for nearly 20 years, the bridge-causeway would extend from Maximo Point, at the southern tip of the city, to a point just north of Bradenton on the Manatee County shoreline, and shorten driving distance between St. Petersburg and Sarasota by about 50 miles.

Plans call for nine sections of solid fill, totalling 49,600 ft., joined by eight open trestles totalling 17,400 ft. Main channel structure will be a 912-ft. cantilever span, with a 135-ft. clearance. The roadway will be 32 ft. wide (including shoulders) on the causeways and 26 ft. on the bridges.

In another action on speeding construction of vitally-needed highway bridges, the Navy Department last week had consented to the construction of a $6,000,000 low-level highway bridge

Press Assns. Photo

***Real Service**—Pittsburgh, Pa., motorists crossing city bridges now undergoing repainting, get special service, as indicated by the sign at right. Local authorities offer a free polishing job.*

over the York River at Yorktown, Va., after some years of controversy over the Navy's contention that such a structure would impede ship movements on the stream.

Boston takes over "El"

By the transfer of a check for $20,297,490 from the newly-created Metropolitan Transit Authority to the Boston Elevated Railway Co, Boston last week had started an era of public ownership of transportation facilities.

Owned by the private corporation during its 50 years of existence, the Elevated had been operated since 1918 by public trustees under an agreement with the state guaranteeing dividends (in late years) of $5 per share on the railway's common stock.

Increasing costs of operation, heavy fixed charges and continued annual deficits (made up by taxation in the 14 municipalities directly served by the railroad led to legislation this year doing away with private ownership and setting up the MTA to own and operate the system on behalf of the various cities and towns served.

An important immediate MTA function will be to continue studies for an extended, integrated and improved rapid transit system.

Licenses for contractors

A city ordinance providing for the licensing and regulation of building contractors was adopted recently at Longview, Wash., requiring contractors to pay $15 license fees and post $1,000 damage surety bonds.

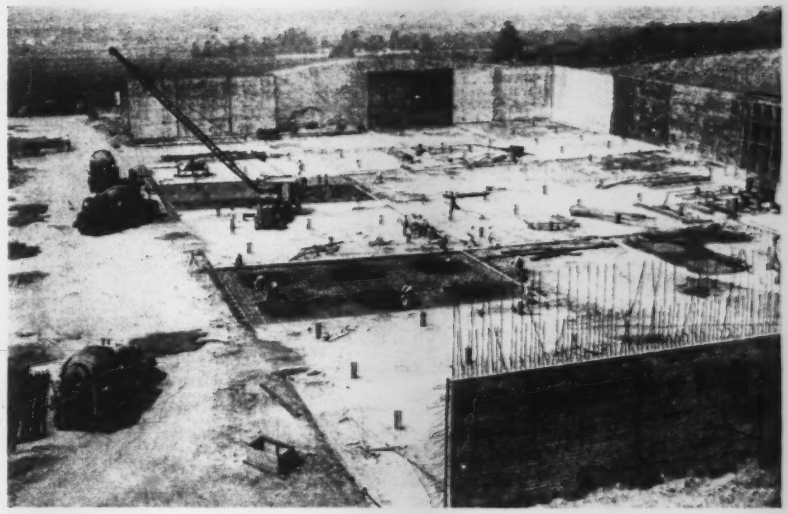
Other provisions require that the contractor be approved by an examining board to consist of two contractors, two property owners and an architect; and set up two licensing classifications —one for small work and remodelling, and the other for commercial buildings and industrial construction.

Park projects

The Caldwell and Scott Construction Co. of New York City and Ft. Lauderdale, Fla., has been named by Ft. Lauderdale officials as supervising general contractor for a $4,000,000 municipal recreation project on the oceanfront to occupy the 27 acre site of a former U. S. Coast Guard station.

Work will include construction of an auditorium-theater seating 2,000; a restaurant, a youth center, and bathing facilities.

At San Diego, Calif., the city park Commission approved the construction of a $300,000 meeting hall to be used for civic functions and by veterans' organization. Funds for construction were made available through net proceeds of the city's sale of buildings at the former Camp Callan purchased in 1946 (*ENR* Oct. 17, 1946, vol.p.490).



***Reservoir Takes Shape**—A 25,000,000-gal. reservoir being built at the mouth of McClure Canyon for the City of Burbank, Calif., is the first step in the city's $6,000,000, 5-year construction program for improving its water system. The reservoir will be 440 by 320 ft. with 25-ft. sidewalls 24 in. thick at the base, and covered by a reinforced concrete roof slab, supported by the walls and some 300 concrete columns, each 20 in. in diameter. A 20-ft. layer of earth will cover the roof slab to permit landscaping.*

Special streets for trucks

Philadelphia and Pennsylvania have announced plans to build roads suitable for heavy duty trucks so that the vehicles can be channelled on to the special highways and certain streets.

A survey has just started to supply engineers with the required information. From a list of all trucks in the Philadelphia area, every tenth truck will be checked by a State Highway Department representative. Five thousand owners will be asked to list the commodities which their trucks haul, the average number of daily trips and the routes normally used.

From the information obtained in the survey state and city engineers said it will be possible to build roads and streets especially for handling heavy duty trucks.

Chester road plans

The City of Chester, Pa., announced plans for highway construction that will see the expenditure of more than $10,000,000 on a program to remove the bottleneck the city's central business streets offer to traffic moving between Philadelphia, Baltimore, Washington and southern points.

The Baltimore and Ohio Railroad and the Pennsylvania road department will cooperate in the program, which would include construction of a submerged arterial highway through the northern part of the city to carry the traffic of the six arterial highways that now thread through the business district.

Other plans for relieving municipal traffic congestion included: a proposal by the Columbus, Ohio, city planning commission for construction of a $2,000,000, 4,000-car parking center, to be built beneath the statehouse lawn; and at Pittsburgh, Pa., the city's new Parking Authority announced its first parking facility should be in operation by next year to provide added parking in the congested business area.

50-year plan for Ottawa

The Federal District Commission of Ottawa, Canada, recently presented a plan to the Canadian House of Commons for a 50-year program of improvements designed to improve communications in the city, and to enhance its appearance.

Among proposals are the removal of railroad freight tracks, moving of all industry to commercial areas, and the development of parkways and express highways to carry through traffic across the capital city.

Arizona construction dispute settled

Unions and contractors agree to arbitrate — Other news from the labor front.

The construction industry in Arizona has resumed full operations following agreement by contractors and building trade unionists to submit all phases of their lengthy dispute to a 3-man board of arbitration.

At the end of the 25-day tie-up that halted construction totaling more than $30,000,000, some jobs were resumed the following day, and nearly all men were back at work within a week. The series of strikes started when unions declared the Del E. Webb Construction Co.—largest operator in Arizona—was unfair, thus precipitating a tangle which at its height immobilized more than 150 firms and made thousands of workers idle.

Issues to be settled by a 3-man board of arbitration include working rules, wages and classifications and working conditions.

The settlement will set a nationwide precedent in that American Federation of Labor representatives declared it was the first time the AFL has submitted working rules to arbitration. Thus, it was pointed out, the state of Arizona may be setting a pattern by analyzing all working rules and wages so that construction costs can be lowered and production increased.

Named to the arbitration board were William D. Taylor of Tucson, regional representative of the Metal Trades Federation, AFL, for labor, and L. Carl Holmes, former member of the Arizona Industrial Commission and widely known farmer, for management.

Unable to agree on the selection of the third member, those two submitted the selection to Lewis B. Schwellenbach, U. S. Secretary of Labor.

Other labor developments

On Aug. 20, a contract prohibiting lockouts and strikes and providing for an arbitration board to settle all controversies was signed by the San Antonio, Tex., Construction Employers Council, Inc., and the San Antonio Building and Construction Trades Council. The contract does not cover wages. These will be stipulated in other contracts. The employer's council has 40 members while 5,000 workers belong to the building and construction trades council.

AFL building trades unions in the Hartford and New Britain areas of Connecticut have signed a 1-year contract granting a 10-cents an hour increase to unskilled labor from $1.25 to $1.35 cents an hour. About 1,800 workers are members of Locals 230 and 611 of the International Hod-Carriers and Building Laborers, AFL. Foremen received a 20 percent increase, bringing their wages to $1.62 an hour.

Organized building trades workers in Boston, Mass., obtained an average raise of 14.2 percent during the last year, Wendell D. Macdonald, Regional Director of the Bureau of Labor Statistics, has announced. This keeps pace with the nationwide average of 15 percent.

A 7-week strike by 33 members of an AFL union against two ready-mix concrete companies in Minneapolis, Minn., ended Aug. 22 when the firm agreed to raise wages.

To relocate highway for Windy Point Dam

Gov. Earl Warren of California has signed a legislative bill appropriating $2,475,000 to relocate about two miles of Los Gatos-Santa Cruz highway to permit building a proposed dam at Windy Point.

The money will revert to the state's general fund, however, unless within two years the state engineer shall have approved plans and specifications for the dam and voters of the Santa Clara Valley Water Conservation District shall have approved a bond issue to finance the dam.

Make preliminary report on Middle Rio Grande

The Reclamation Bureau has completed a preliminary report on the proposed Middle Rio Grande project, and the Corps of Engineers expects to complete its recommendations soon so that both reports may be in Washington, D. C., by Sept. 1.

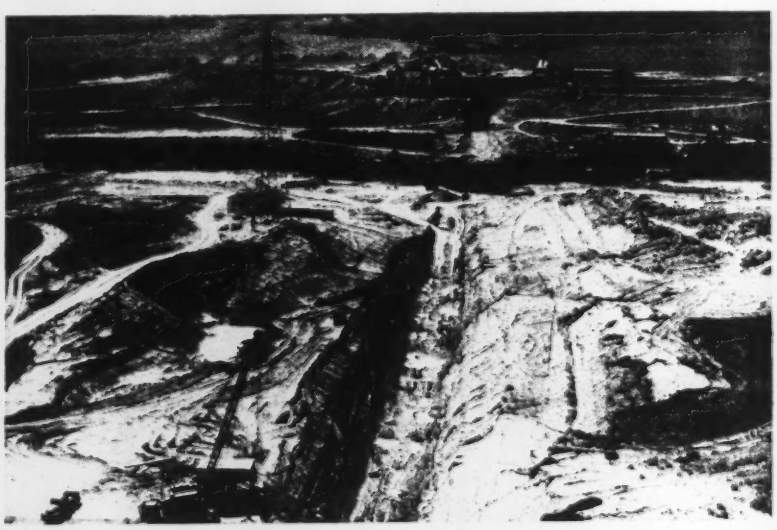
The two will be coordinated in Washington offices of the agencies and sent to the governors of Colorado, New Mexico and Texas before being submitted to Congress.

The two agencies have agreed on main phases of the proposed project including construction of three flood control dams, channelizing the river through the middle valley, improvement of river levees and rehabilitation of the irrigation system of the Middle Rio Grande Conservancy District.

The dams recommended would be one of 850,000 acre-ft. capacity at Chiflo on the Rio Grande near the Colorado state line; 965,000 acre-ft. at Chamita, on the Rio Chama near Espanola, and 120,000 acre-ft in Jemez Canyon near Rio Chama's junction with Rio Grande.

Estimates of the cost of the proposed projects begin at $50,000,000.

John Mutz, area engineer for the bureau, said that no major objections to the completed reports are expected, since the studies are the result of conferences between state and federal officials.



***Cutoff Trench Ready**—The first bucket of concrete has been poured into the cutoff trench that will form the base of Angostura Dam on the Cheyenne River in South Dakota. The dam, being built under direction of the Bureau of Reclamation, will consist of a concrete overflow section across the river channel and an earth section on the right abutment, the entire structure having a total crest length of 2,030 ft. and a maximum height above the river bed of about 150 ft.*

"Foul—but you drink it!" ad is scored by new president of AWWA.

Waterworks men at New York State meeting told public confidence is undermined by stream-pollution article in national women's magazine—Technical trends surveyed

N. T. Veatch, president of the American Water Works Association, bitterly denounced the "Foul—but you drink it!" advertisement sponsored by the *Woman's Home Companion* magazine as "destructive propaganda" in an address before the New York State Section of the AWWA on Sept. 4.

"Public confidence in domestic water supplies throughout the nation has been seriously undermined as a result of this misrepresentation of fact," said Mr. Veatch, "and those engaged in the waterworks profession have been grossly insulted."

He pointed out that following the appearance of the full-page advertisement in more than half a dozen major newspapers a week ago, the headquarters office of AWWA telegraphed a protest to the publishers of the *Women's Home Companion*. The magazine used the advertisement to promote attention to an article in its August issue on the subject of stream pollution abatement.

In dramatizing the conditions caused by indiscriminate pollution of streams and lakes, continued Mr. Veatch, the article fails to acknowledge that present-day water purification practices are such as to provide suitable safeguards.

More than 300 were registered for the meeting, held at Plattsburg, N. Y., which was designated as a "Northeast Roundup" for those who were unable to attend the July national meeting in San Francisco. Part of the program consisted of interpretative resumes of papers at the national meeting.

Highlighted on the program was a survey of technical trends by Charles R. Cox, chief of the bureau of water supply, New York State Dept. of Health.

Mr. Cox pointed out that the new style flocculating and clarification units developed prior to the war have resulted in minimizing the amount of load placed on sand filters. There is a definite tendency, therefore, for the unit rates on filters to be increased and for coarser filter sand to be used. Most recent example of this trend is evidenced at the new filtration plant in Chicago, where special attention has been given to effective pretreatment. Here the feasibility of using a unit rate of 4.0 gpm. per sq. ft. of filter area is being shown (*ENR* July 10, vol. p. 44).

Development of diatomaceous-earth filters for clarification of water represents the only basic change in filtration since the rapid sand filter was developed during the period 1885-1900, continued Mr. Cox. While it is premature at this time to determine the ultimate place for these earth filters in water supply practice, available data indicate that units may be of special value in clarifying surface water from lakes and large reservoirs where high turbidities do not prevail but where algae and suspended solids may be removed without elaborate flocculating and clarifying equipment.

Mr. Cox also called attention to the operation of the Plattsburg, N. Y., filter plant, where free residual chlorination of raw water makes possible effective coagulation of water from a large reservoir without the necessity of using alum and where greatly improved disinfection and prolonged filter runs obtained at lower total chemical cost.

"This represents another example," said Mr. Cox, "where the oxidizing power of free residual chlorine is resulting in greatly improved destruction of microrganisms as well as the precipitation of iron manganese and organic matter. Furthermore, these very desirable results are accompanied by the effective control of tastes and odors."

Delegates visiting the Plattsburg plant, which uses fine coal as the filter medium and surface sweep wash, learned that filters have been operated for as long as 1,000 hr. without resort to backwashing. Average filter runs are 700 hr.

In a discussion of groundwater use in New York, M. L. Brashears, Jr., district geologist of the U. S. Geological Survey, reported that Long Island groundwater resources were among the most extensively develped in the United States, exceeded only by those in the California irrigation areas. He stated that on the 113 sq. mi. area of Long Island, the daily replenishment is about one billion gallons and usage averages some 300 mgd.

Elon P. Stewart, division engineer of the Syracuse water department, was chairman of the meeting. A conference session on technical practice was conducted by S. P. Carman, consulting engineer of Binghamton. Rollo K. Blanchard, vice president and engineer of the Neptune Meter Co., and secretary-treasurer of the local section, was in charge of all arrangements.

***Parking Problem Solved**—Macy's—Jamaica, newest store of the R. H. Macy & Co., Inc., which opened for business last week in the suburban Jamaica section of New York City, provides roof-top parking space for 150 cars. Fully air-conditioned, the 196 by 275-ft. building has a structural steel frame with 35 by 60-ft. bays, and an exterior of limestone with bronze trim. Architects were Robert D. Kohn and John J. Knight and Ferdinand Klebold, Associates, with Richard G. Belcher as consultant. Structural engineers are Weiskopf and Pickworth. Vermilya-Brown Co. was general contractor.*

MEN AND JOBS

Frank Matejka, construction engineer on the Estes Park unit of the Colorado-Big Thompson project, gives visible proof that everything is dry and nice in the Rams Horn Tunnel on a recent inspection trip.

Col. H. S. Miller, chief engineer, U.S.F.A. at Vienna, Austria, poses on the steps of a massive air raid shelter in Vienna.

Col. John B. Hughes, U. S. Army engineer, Charleston, S. C., district has been named acting engineer of the Wilmington, N. C., district to succeed **Col. B. C. Snow,** transferred to Guam.

C. O. Mannes, former King County engineer at Seattle, Wash., has joined the staff of DeWitt C. Griffin & Associates, Seattle consulting engineers.

F. R. Worthen, Tacoma, Wash., has established a consulting engineering to be known as F. R. Worthen & Co.

V. W. Breeze, Shelby, N. C., engineer is directing preliminary plans for the proposed construction of a $250,000 high school building at Mooresville, N. C.

J. F. McBirney has resigned as city engineer of Boise, Idaho, after having been with the engineering department since 1911. He started as office engineer, became assistant city engineer in 1917 and city engineer in 1937.

William J. Keefe, for 20 years chief engineer Massachusetts Department of Public Utilities, has been appointed superintendent of rolling stock of the Eastern Massachusetts Street Railway Co. A graduate of Massachusetts Institute of Technology, 1910, Mr. Keefe will succeed **Herbert I. Sullivan,** who retired after more than 41 years service.

Walter A. Keppler, assistant Cape May County, N. J., engineer for 19 years, has been appointed county engineer, succeeding Roland A. Sharp. Keppler entered the Army Engineer's Corps in 1943, and served as a lieutenant for two years. He was employed by the Pennsylvania State Highway Department for two years before becoming assistant to the county engineer.

Retiring after 35 years, **Robert M. Pennock,** chief structural engineer in the Division of Buildings, Buffalo, N. Y., will be associated with the Reecon Co., Buffalo consulting engineers. **George R. White,** associate structural engineer in the division of buildings, will fill Mr. Pennock's old post.

John P. Shannon has been appointed engineer of roadside improvement and erosion control in the Kentucky highway department. He formerly worked for the Tennessee Valley Authority and once served with the Cincinnati Public Recreation Commission.

Alden F. Aust, former senior project planner, F. P. H. A., Region 8, Cleveland, Ohio, has joined the staff of the St. Paul, Minn., City Planning Board as city planner under George H. Herrold, director of city planning. Prior to his military service as aviation pilot first class, U. S. Navy, Mr. Aust was with the State Planning Board of Wisconsin.

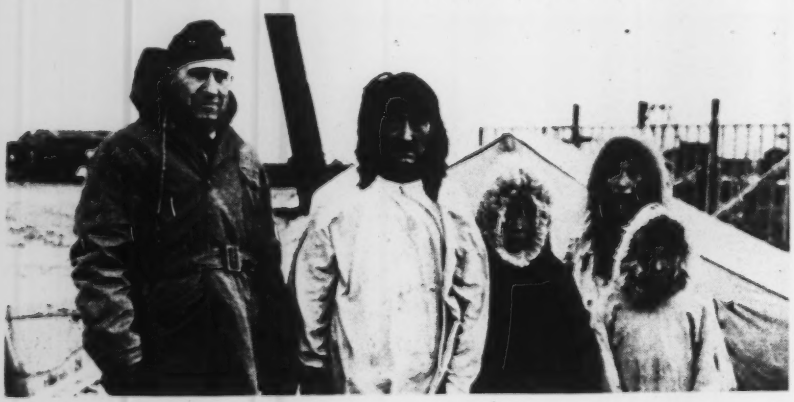
Sidney R. Williams of Cleveland, Ohio, has been named assistant municipal water engineer at Scotland Neck, North Carolina.

Raymond L. Baca, formerly assistant city manager of Pelly, Tex., recently merged with Goose Creek, has been made Public Works Director of Pelly. **O. W. Grantham,** former public works director of Goose Creek, for 18 years, has been made superintendent of the city water department of Pelly.

C. B. Sanders, formerly assistant engineer at Sault Ste. Marie and Hamilton, Ont., has been appointed town engineeer for Cobourg, Ont.

Walter A. Bogert, engineering specialist of the New York Central Railroad, has been placed in charge of construction of the new $4,500,000 union station at Toledo, Ohio. His latest engineering job was reconstruction of the Sandusky Bay Bridge, begun in 1944. He has been with the railroad for 26 years.

Col. Albert G. Matthews, retired U. S. Army engineer, has been appointed chief engineer of the water conservation study program established by the 1947 Florida Legislature. The Cabinet Budget Commission has approved expenditure of $40,300 to begin the study. The legislature appropriated $150,000



Rear Adm. Carl E. Trexel, CEC, USN, had his picture taken with the finder of the Will Rogers-Wiley Post plane, Claire Oakpeha, and his family on a recent inspection trip the admiral made to Point Barrow, Alaska. Adm. Trexel was recently appointed Director, Pacific Division, for the Navy's Bureau of Yards & Docks.

for the job and an additional $25,000 is being spent on a groundwater investigation conducted by the U. S. Geological Survey in cooperation with the state.

Lt. Col. Lavonne E. Cox of the Corps of Engineers has been appointed third assistant district engineer commissioner for Washington, D. C. He will assist Brig. Gen. Gordon R. Young, engineer commissioner. A graduate of Alabama Polytechnic Institute, Col. Cox spent 2½ years in the China-Burma-India theater during World War II building airfields. He has just completed work on his master's degree in civil engineering at Massachusetts Institute of Technology. This is the first time in 8 years that Washington has had its full quota of three assistants to the engineer commissioner, the other two assistants being Lt. Col. Kenneth E. Madsen and Lt. Col. Vernon A. Shrum.

George E. McDaniel, Jr., formerly resident engineer for the Texas State Highway Department in Galveston County for several years and more recently county engineer of Waller County, has been appointed city engineer of Galveston.

Charles E. Miller, formerly of the Concrete Arch Co., Inc., has joined the Ashland Concrete Corp. at 52 Wall Street, New York City, contractors in plain and reinforced concrete construction.

Albert G. Skelton, who has been maintenance superintendent of the Portland district, will succeed Mr. Williams as division engineer. **L. A. DeFrance** takes over Skelton's post and **L. R. Chandler** becomes Portland district maintenance superintendent.

Paul M. Zander is now city engineer of Little Rock, Ark.

City Engineer Charles C. Brown was named by the city council to become acting city manager of Dover, Del. He succeeds **Gilbert L. Wilcox,** resigned.

Walter E. Blomgren, one of the engineers who completed preparation of plans for Hoover Dam, has been appointed assistant regional director of the Bureau of Reclamation at Denver, Colorado.

Col. Walter E. Lorence, head of the Army Corps of Engineers, Pittsburgh, Pa., district, has asked to be retired from active service. His request followed his assignment by the War Department as engineer of an advisory group to the Republic of China, with headquarters at Nanking. He asked that he be retired from service because of his inability to combat conditions in China which hospitalized him during the War. Colonel Lorence would have completed 30 years in the Army in June, 1948. Since taking over the post in Pittsburgh, Colonel Lorence has devoted much time and energy toward the Mahoning Valley's efforts to put through the proposed Lake Erie-Ohio River Canal.

Arthur W. Harrington, district engineer of Albany, N. Y. district, Surface Water Division, U. S. Geological Survey, recently completed 25 years in his post. Following graduation from Cornell University in 1909, Mr. Harrington worked as a construction engineer until he entered the Geological Survey in 1914. In 1922 he was made New York district engineer in charge of surface water investigations in the state and on the St. Lawrence and Niagara Rivers.

Alfonso L. Tammaro has been named acting manager of the Chicago operations of the Atomic Energy Commission. He will be responsible for operations of the Argonne National Laboratory, center of the research and development activities of 29 mid-continent industrial and academic institutions. For 12 years Mr. Tammaro was engaged in private and government architectural and construction work and during the war was attached to the Manhattan District, which developed the atomic bomb, as a lieutenant colonel and assistant to Col. K. D. Nichols, district engineer. Since January 1, 1947, Tammaro has served as assistant to the general manager and the manager of field operations for the commission.

Stephen H. Poe, engineering information officer of the U. S. Bureau of Reclamation at Denver, takes notebook in hand to record some observations made by George A. Samson, field engineer on the Horsetooth Reservoir job of the Colorado-Big Thompson project.

Richard J. Wilson, area field engineer of the Bureau of Reclamation at Grand Lake, Colo. has good reason to squint when he gets in the sun. He spent a good many months inside the Alva B. Adams Tunnel, the 13-mi. bore piercing the Continental Divide to bring west slope water through the Rocky Mountains.

Working on the Popolopen water supply dam for the U. S. Military Academy, West Point, N. Y. are: Lt. Col. J. C. Lowry (center), Engineer-in-charge, Corps of Engineers; A. W. Bury (left), resident engineer, Corps of Engineers; and T. W. Cohill (right), general superintendent for Andrew Gull Corp. and L. G. Defelice & Son.

Geological Survey to aid N. C. on road mapping

The North Carolina Highway and Public Works Commission said last week it had completed arrangements with the U. S. Geological Survey for the initiation of an extensive cooperative mapping project.

Under the terms of the agreement, the highway board will contribute $50,000 during the next two years, to be matched by an equal sum from the federal agency. The areas to be mapped will be selected by the North Carolina group, and will be along routes that are to be part of the national system of interstate highways.

Under the initial project, about 3,000 sq. mi. will be photographed and mapped. These map will guide the highway engineers in selecting the most suitable routes for detailed planning and design. The map compilation will be by the multiplex method of stereoplanimetry, and copies of the map manuscripts will be furnished to the state highway engineers as soon as completed.

Railways along freeways urged in Los Angeles

Rail transportation lines to be built along routes of the various freeways in the Los Angeles area were recommended in a report released by Arthur F. Ager, senior engineer for the California board of public utilities.

The survey, made by order of the board with the cooperation of the Pacific Electric Co. and local governmental agencies, says that "Unless action is taken now, Los Angeles probably won't have a rapid transit system for years to come."

The report specifically recommends rail facilities on Hollywood Freeway connecting with the Cahuenga Freeway and the San Fernando valley and extending to downtown Los Angeles points. Such construction, it is stated, would add only 15 or 20 percent to the total cost of the freeways. Delay would mean vastly augmented expense in separate construction programs.

The report describes as infeasible the use of buses along the Arroya Seco Freeway to Pasadena unless they are operated on nonstop schedules with all loading and unloading off the freeway itself.

Recently it was announced that buses operating on the Hollywood Freeway now under construction would be provided with loading and unloading zones separated from the automobile roadways by concrete walls.

Final contract let for Galveston-Houston road

A $616,764 contract has been awarded to the R. B. Smith Construction Co. of Houston, Tex., by the Texas Highway Commission for the construction of the last part of the Galveston-Houston superhighway. Contracts on all the rest of the highway have been let with the exception of a clover-leaf traffic circle to be built close to the Galveston-Harris County line.

The contract awarded includes grading, building of drainage structures and laying a shell base on the final 7½-mile highway extending from a half mile north of the Galveston Causeway to the Camp Wallace Access Road close to Dickinson.

On Aug. 5, the first concrete on the superhighway was poured at the intersection of Pierce and Crawford streets. Brown & Root are the contractors.

ENR SUBSCRIPTION COSTS $1 MILLION — IN CHINA

A one-year subscription to *Engineering News Record* now costs more than $1,000,000 in Chinese "Yuan" dollars—about $19,423.08 per copy in the Chinese currency—according to H. Pollet, dean of engineering at Kung Shang University, Tientsin.

The cost is not quite so tremendous as it seems. The "Yuan" dollar is now quoted on monetary exchanges as worth less than one-tenth of a mill in American money—some 11,000 "Yuan" being worth one dollar in U. S. currency.

Basic building code draft readied for review

After many months of intensive work by 70 of the nation's building code experts, a basic building code of the Building Officials Conference of America, Inc., is now being prepared for presentation to all industry factors at a joint annual meeting of the conference and the Building Officials Foundation to be held in Columbus, Ohio, Sept. 22 to 25.

Foundation officers said that some sections of the basic code have already been approved by the conference Basic Code Committee, and the Board of Consultants and Review, and that every effort is being made to compose differences of opinion on the remaining sections prior to the opening of the meeting. With the approval of all sections by the conference, the code will be given wide distribution for study and recommendations.

New standard effective for Douglas fir plywood

Effective for new production on Sept. 15, a new "Commercial Standard CS. 47" for Douglas fir plywood sets higher performance standards for adhesive used in interior-type plywood, raises quality requirements for inner plys of all grades of exterior and interior types, and simplifies grades.

The new standard requires interior-type plywood to withstand an average of 10 cycles of wetting and drying without failure, as compared with former tests of two cycles without delamination.

In effect, the standard also replaces the old wallboard grade, which was popular for interior wall coverings and for miscellaneous uses where only one paintable surface was desired, with a new sound-one-side grade. One face of the new grade is the same as for the old wallboard. In the back face, however, smaller defects are permitted than in the wallboard grade but they may be more conspicuous than in the back of the old sound-one-side grade.

Copies of the standard may be obtained without charge from the Douglas Fir Plywood Association, Tacoma 2, Wash.

Mass. Highway group sets date for road show

Recognizing the need for a complete understanding of the most up-to-date methods of road, park and sewer construction, street lighting installation and the regulation and control of motor vehicle traffic, the Massachusetts Highway Association has arranged a seminar together with a display of the latest highway construction equipment to be held in the Commonwealth Armory, Boston, on Oct. 14-16.

Superintendent of Public Works Albert E. Casey, Stoneham, secretary of the association, has announced that the New England Road Builders Association, New England Equipment Distributors Association, Illuminating Engineering Society of New England, Massachusetts Safety Councils, Massachusetts Police Chiefs Association, Rhode Island Highway Association, Associated General Contractors of Rhode Island, Maine Good Roads Association, New Hampshire Good Roads Association, Associated General Contractors of Massachusetts and New England Police Chiefs Association have joined with the Massachusetts Highway Association in sponsoring the exposition and will have as guests officials of all the states, cities and towns of New England.

Start new attack on Potomac pollution

A new attack on its stream pollution abatement problem was started last week by the Interstate Commission on the Potomac River Basin at a two-day meeting at Staunton, Va. At that time the organization established primary machinery to make improved soil use and conservation as it affects stream pollution one of the basic activities of the commission.

In the past, the commission has worked primarily to reduce the pollution caused by municipalities and industry. It has always known that poorly planned agriculture and forest activities have not only resulted in extensive silt being carried into the Potomac but that much pollution of the river also resulted. However, until last week the commission did not believe that it had the resources and the time to attack this problem.

Before deciding definitely to go ahead with this part of the program, the commission asked Department of Agriculture officials to outline how they believed agriculture work in the basin polluted this stream. These experts reported that improved farming methods would not only result in greater production and a reduction of the loss of valuable soil but that the quality of the water of the Potomac would be greatly benefited.

The commission also took steps to work more closely with municipal groups. Previously the commission has worked with industry through a special committee, and with state officials through members of the commission, depending primarily on the state men to contact officials of municipalities and other local groups. Although this has resulted in good progress, last week's action was taken to provide for a 15-man committee to work primarily with the local groups.

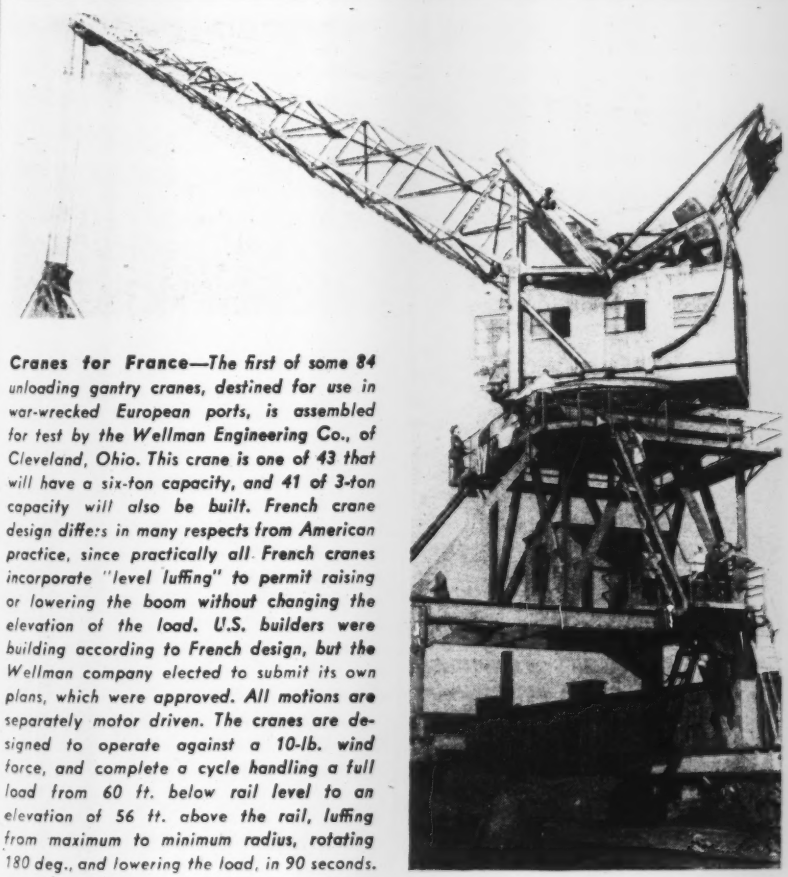
Two-state agreement held

Another highlight of the meeting was the cooperative program worked out by the West Virginia water commission and the recently-created Maryland Water Pollution Control Commission for cleaning up the upper reaches of the Potomac. The two state organizations will make detailed studies of what sections are most critical and then will work closely with municipal and industrial organizations to reduce pollution at these points. Much additional sampling will be done and both cities and industries will be encouraged to employ consulting engineers to prepare plans for cutting down on pollution. Dr. Joseph McLain of the engineering department of Washington College at Chestertown, Md., has been appointed chairman of the Maryland commission, and Paul W. McKee, formerly with the North Carolina State Health Department, has been named executive secretary.

Savage River dam work

The commission plans to continue its work to get the Savage River Dam completed on the river of that name 22 miles southeast of Cumberland. This 175-ft. high earthfill was begun in 1939 as a WPA project and much was done before the job was shut down in 1942 because of the war. The Washington, D. C., district office of the Corps of Engineers is now completing plans for the project and Congress at its next session will be asked for funds to complete construction.

Raymond V. Long, head of the Virginia Planning Commission, was elected chairman of the Potomac Commission, and Harold A. Kemp, director of sanitary engineering for the District of Columbia, vice chairman. D. L. Seckinger, of the District of Columbia Health Department continues as treasurer and Edwin R. Cotton as engineer-secretary.



***Cranes for France**—The first of some 84 unloading gantry cranes, destined for use in war-wrecked European ports, is assembled for test by the Wellman Engineering Co., of Cleveland, Ohio. This crane is one of 43 that will have a six-ton capacity, and 41 of 3-ton capacity will also be built. French crane design differs in many respects from American practice, since practically all French cranes incorporate "level luffing" to permit raising or lowering the boom without changing the elevation of the load. U.S. builders were building according to French design, but the Wellman company elected to submit its own plans, which were approved. All motions are separately motor driven. The cranes are designed to operate against a 10-lb. wind force, and complete a cycle handling a full load from 60 ft. below rail level to an elevation of 56 ft. above the rail, luffing from maximum to minimum radius, rotating 180 deg., and lowering the load, in 90 seconds.*

New standards approved for technical work

The War and Navy Departments have approved the first of a series of standards and specifications designed for the solution of problems of interest to technical groups.

The approved JAN (Joint Army-Navy) standards are:

JAN-STD-2—Drawing Sizes
JAN-STD-12 — Abbreviations for Use on Drawings
JAN-STD-19—Welding Symbols
JAN-STD-102—Anti-Friction Bearing Identification Code

By means of the drafting standards, it is expected to set up practices for the preparation and interpretation of drawings to eliminate many errors in design, production, inspection and maintenance that frequently occur as a result of faulty drafting practices, and to eliminate differences in contractural requirements of the various services and bureaus for drawings of similar or identical items.

ENGINEERING SCHOOL NEWS

A 2-million-pound testing machine given first trial at University of Washington—Venezuelan engineering educator studies U. S. highways—Many faculty changes reported

A 2,000,000-lb. testing machine, embodying entirely new construction principles, has been given its first trial following installation in the civil engineering building at the University of Washington in Seattle.

The huge machine, 37 ft. high, made its trial run by testing a 6-ft. concrete culvert under the supervision of Prof. F. B. Farquharson, director of the university's engineering experiment station. Weighing 300,000 lbs., it incorporates several new features which make its steel columns more rigid, give the machine greater accuracy and make it more versatile. Special flex-plate construction ties the sensitive yoke to the transverse rigid beam. There are three contacts between them—the capsule, which acts like a ball-bearing and has no vertical stability; the initial load springs, which have no vertical stability; and the flex plates which provide practically no vertical restraint and a maximum of horizontal rigidity. Adjustable guides, triangular in shape, make it possible not only to keep horizontal movement to a minimum, but also to lock the crosshead in position when required.

The third feature which makes it possible to maintain the minimum tolerance against horizontal deflections under load, to prevent premature buckling of compression specimens and to neutralize horizontal components of force, is the flaring of the steel columns from a point about one-third of the way from the top to the base of the machine. This affords maximum rigidity or minimum deflections when testing specimens so long that their height forces the columns to function as cantilever beams. It is asserted the machine will have from 300 to 400 percent greater rigidity than machines of earlier design.

The machine is to be used for tension and compression testing, as well as transverse testing. It will take specimens up to 10 ft. wide, 20 ft. high and (for transverse testing) 80 ft. long. The machine was erected in the Eddystone shops of the Baldwin Locomotive Works then dismantled and shipped by water through the Panama Canal to Seattle.

The university plans to devote the machine to various tests for the timber industry; to testing concrete culverts for the state highway department; and to other work for industries of the Pacific Northwest.

Antonio J. Vicentelli, who is in charge of highway construction courses in the school of engineering of Central University, Caracas, Venezuela, is now studying U. S. highway construction for a three month period. He was invited under the travel grant program of the U. S. Department of State. Mr. Vicentelli has worked in the Venezuelan Ministry of Public Works and on the construction of the municipal airport at Marquetia. He has been the winner of several competitions in designing and constructing bridges, roads, and drainage systems. He received his degree in civil engineering at Central University; for two years was in charge of the construction of roads in the state of Guarico.

Ralph B. Draughton, 47, has been named acting president of the Alabama Polytechnic Institute in place of the late Luther N. Duncan.

New instructors in engineering for the College of Applied Science at Syracuse University are Ronald Remotenko of Massachusetts Institute of Technology and Eugene K. Plofker of the College of the City of New York.

Lieut. Col. Jesse C. Dietz, a research assistant in civil engineering at the University of Wisconsin, and now completing his work there toward a Ph.D. degree in sanitary engineering, has become assistant professor of sanitary engineering at the University of Illinois.

Warren W. De Lapp, assistant professor of civil engineering at the University of Minnesota, has resigned to take a similar position at the University of Colorado. Professor De Lapp recently received his doctorate in the field of fluid mechanics from the University of Minnesota.

Russell C. Brinker, associate professor of civil engineering at the University of Minnesota, has resigned to accept a similar position at the University of Southern California. Upon the retirement of Prof. A. S. Cutler in June, Professor Brinker took charge of the surveying and railroads division, and of the summer surveying camp.

D. L. Sargent, of Cleveland, Ohio, has become assistant professor in the department of civil engineering at the University of Utah.

***Machine for Numerical Analysis**—L. M. K. Boelter, dean of the college of engineering, University of California at Los Angeles, watches R. L. Stoker, UCLA engineer, place mathematical problem on one of four "input" tables of Differential Analyzer to be used in university's Institute of Numerical Analysis. At left is Engineer Irwin Goldstein, observing answer as it comes out on one of two of analyzer's "output" tables. Differential Analyzer, the sixth to be built and the first to be commercially installed by General Electric, will be part of a battery of calculators when the institute is completely equipped two years from now.*

OBITUARY

Harry F. Trask, 68, a civil engineer of West Medford, Mass., died in Boston, Aug. 27.

Henry C. Schroeder, 85 former highway construction contractor, died recently in Strong Memorial Hospital, Rochester, N. Y. He entered the contracting business nearly 50 years ago.

Mark Woodward, 65, director of the cement and allied division of the Vulcan Iron Works at Wilkes-Barre, Pa., died Aug. 22 in Wilkes-Barre. During World War I Woodward was with the Navy in Washington as an engineer, and later he was sent by the Navy to Allentown, Pa., where he helped to increase cement production. He also worked for several years in Chicago, where he made a study of sewage sludge in that city's rivers. He was graduated from George Washington University in 1906 with an engineering degree.

Dennis O'Brien, former assistant civil engineer of the New York City Water Department, died recently in Syracuse, N. Y.

John S. Barlow, 65, died Aug. 28 in Dallas, Tex. He had worked with the Public Works Administration, the Federal Works Agency in Fort Worth, and on the Naval Air Station at Corpus Christi.

Walter S. Newhall, 81, for more than 30 years head of the Newhall Co., railroad contractors and construction engineers, before his retirement in 1935, died in Chagrin Falls, Ohio, Sept. 1.

Robert S. Strader, 76, retired civil engineer, died Aug. 31 at Wissahickon, Pa.

George S. Mickle, 84, former engineer of Lake County, Fla., died at Tallahassee, Aug. 24. He had specialized in highway and railroad construction.

L. Sterling Boggess, 60, civil engineer for the Public Roads Administration, attached to the Guatemala project of the Inter-American Highway, died on Aug. 18. Mr. Boggess was a civil engineering graduate of Kentucky University, and went to the Philippine Islands in 1908 as an engineer for public works in the Philippine Islands, serving in various capacities until 1920. On his return to the United States he spent most of his time in the South and Southwest in road work. He went to Central America for the Public Roads Administration on the Inter-American Highway project in 1943 and was stationed for about two years in Managua, Nicaragua. Since that time he had been in Guatemala City as an engineer on the Inter-American Highway.

TVA starts building power service structure

Construction work has been started on the new TVA power service system building located about a mile south of Wilson Dam on the dam highway. It will cost between $2,000,000 and $3,000,000.

Largest in the TVA system, the structure will be the center for general repairs on all TVA equipment, housing service shops and power engineering and construction forces, the Alabama division maintenance staff, a large warehouse and a cafeteria.

New natural gas pipeline OK'd for Pennsylvania

The Pennsylvania Public Utility Commission has authorized construction of a new $5,000,000 natural gas pipe line in eastern Pennsylvania by the Manufacturers Light and Heat Co. of Pittsburgh. The line will be a 125-mile, 14-inch main from near Coatesville to the New York State Line at Port Jervis, N. Y.

MAJOR MEETINGS

Building Officials Conference of America, Inc., joint annual meeting with Building Officials Foundation, Deshler-Wallick Hotel, Columbus, Ohio, Sept. 22-25.

American Association of State Highway Officials, 3rd annual meeting, Waldorf-Astoria Hotel, New York City, Sept. 22-26.

Associated General Contractors of America, Inc., fall meeting, Savery Hotel, Des Moines, Iowa, Sept. 28-Oct. 1.

Institute of Traffic Engineers, 18th annual meeting, Hotel Fort Shelby, Detroit, Mich., Oct. 1-4.

National Safety Council, annual convention, Stevens Hotel, Chicago, Ill., Oct. 6-10.

American Society of Civil Engineers, fall meeting, Roosevelt Hotel, Jacksonville, Fla., Oct. 13-17.

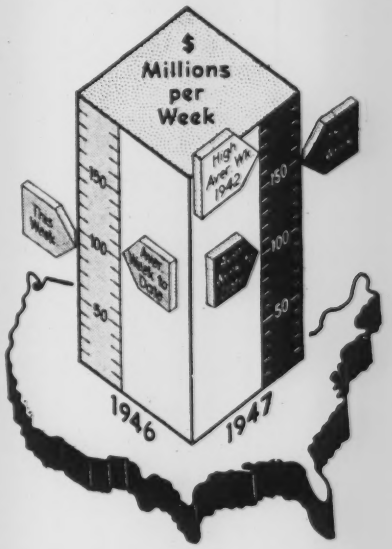
National Metal Congress and Exposition, Palmer House, Chicago, Ill., Oct. 18-19.

American Welding Society, annual meeting, Sherman Hotel, Chicago, Ill., Oct. 20-24.

Engineers' Council for Professional Development, 15th annual meeting, Mount Royal Hotel, Montreal, Canada, Oct. 24-25.

National Council of State Board of Engineering Examiners, 26th annual meeting, Hotel Pennsylvania, New York, N. Y., Oct. 27-29.

CONSTRUCTION ACTIVITY



As Reported this week to . . .
Engineering News-Record

CONTRACT VOLUME

Continental U. S. Only (Thousands of Dollars)

	Week of Sept. 11 1947	Cumulative 1947 (37 wks.)	Cumulative 1946 (37 wks.)
Federal	$16,975	$473,658	$494,862
State & Mun.	46,743	1,215,623	995,818
Total Public.	$63,718	$1,689,281	$1,490,680
Total Private	82,511	2,191,311	2,367,392
U. S. Total	**$146,229**	**$3,880,592**	**$3,858,072**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Dollar Volume (Thousands)

Type of Work	This Week	Cumulative 1947 (37 wks.)	Cumulative 1946 (37 wks.)
Waterworks	$4,106	$79,113	$73,651
Sewerage	2,715	94,204	71,165
Bridges	2,649	121,216	98,113
Highways	20,751	583,042	377,206
Earthwork, Waterways	16,665	216,867	267,429
Buildings, Public	7,729	404,777	278,309
Industrial	35,683	600,647	741,879
Commercial	38,019	1,279,104	1,473,319
Unclassified	17,912	501,622	277,001

NOTE: Minimum size projects included are: Waterworks and waterway projects, $22,500; other public works, $40,000; industrial buildings, $55,000; other buildings, $205,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1947 (37 wks.)	Cumulative 1946 (37 wks.)
NON-FEDERAL	$1,589,378	$1,151,464
Corporate Securities	547,811	332,938
State and Municipal	793,856	593,526
Fed. Aid Highway	247,711	225,000
FEDERAL	818,729	1,714,695
Total Capital	**$2,408,107**	**$2,866,159**

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost.	Sept. '47	417.81	200.84
Building Cost	Sept. '47	317.08	171.46
Volume	Aug. '47	215	94

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *E. R. BIGGERSTAFF, M. R. ROESSLER, Statistics*

WATER SUPPLY

Construction Reports received since this section went to press will be found in Last Minute Construction Reports.

BIDS ASKED

Bids Asked About March 15

Mo., Dixon—City, Charles H. Veasman, mayor, water distr. lines, hydrants, valves, boxes, etc., approx. $30,000; sanitary sewerage sys. of varying sizes, etc. Approx. $40,000. Russell & Axon, 6635 Delmar Blvd., University City, St. Louis, Zone 5, engrs. CD 10/2—ENR 10/17.

Pa., Phila.—Dpt P. Wks., City Hall Annex, addn. to Queen Lane Pumping Station and filter plant. $100,000. E. J. Taylor, Water Bureau Ch. CD 8/9/46—ENR 8/22/46.

Bids Asked September 18

Tex., Mission—City, L. Duncan, mayor, WW sys. imprvs., 6 MG earthern reservoir, 12,000 lin. ft. 6- to 24-in. c.i. pipeline fire hydrants. $100,000. Plans deposit $15.

Bids Asked September 23

Ga., Toccoa—City, water filter plant and other imprvs. Over $32,500. Plans deposit $25. Extended date. J. R. Bracewell & Assoc., Buckhead Theater Bldg., Atlanta, engrs. CD 8/26—ENR 8/28.

Bids Asked September 24

Okla., Bartlesville—City, constructing Butler Creek Reservoir, incl. 270,000 cu. yd. excav., 67,000 cu. yd. rock excav., 4,500 cu. yd. concrete spillway, 13,500 sq. yd. riprap, 386 lin. ft. 21 in. concrete pipe. $250,000. Plans deposit $30. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 7/17—ENR 7/24.

Bids Asked September 30

Ind., Michigan City — Bd. Water Works Trustees, H. J. Davis, supt., City Hall, WW. incl. 1 story, bsmnt., 34x65 ft., rein.-con., steel filtration plant imprvs. $50,000. Plans deposit $15. Boyd E. Phelps, 232 Franklin St., consult. engr.

Bids Asked October 1

Ky., Louisville—Louisville Water Co., 435 S. 3 St., electric driven pumps, switchgear, appurtenant equip. Extended date. Alvord, Burdick & Howson, 1401 Civic Opera Bldg., Chicago, Ill., engrs. CD 8/1—ENR 8/7.

Bids Asked October 7

Ga., Columbus—City, watermains, $500,000; Plans deposit $25. Extended date. Wiedeman & Singleton, C and S National Bank Bldg., Atlanta, engrs. CD 8/20—ENR 8/28.

LOW BIDDERS

Calif., St. Helena—City, City Hall, Aug. 26, watermains for 36 in. Conn. Valley watermain at Town of Rutherford to city's municipal water sys., from Robert M. Rapp, 705 Bennett Ave., Santa Rosa. **$24,070.**

✦**D. C., Wash.**—U. S. Eng., First and Douglas Sts., N. W., Zone 25, Sept. 4, Flocculation-Sedimentation Basin 4, Washington Aqueduct, Dalecarlia Filtration Plant, Serial No. 46-080-48-4(3), C, from Cramer-Vollmer-Hausen Co., 2601 Connecticut Ave., N. W. **$831,097.** CD 8/16—ENR 8/14.

Ill., Wanconda—Village, c/o clerk, Aug. 18, 100,000 gal. water storage tank on tower, appurtenances, connections, etc., from Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, **$31,900.** Est. $22,500. CD 7/8—ENR 7/17.

Ind., Connersville—Bd. P. Wks., W. McFall, secy., City Hall, Aug. 30, WW imprvs., incl. exten. distr. sys., from Brandon & Son, Whiteland, **$102,709.** Est. $93,000. CD 8/6—ENR 8/14.

Low Bidders

Mo., New Florence—City, E. Zwerfell, village chn., Village Hall, postponed bids to have been opened about Sept. 1, WW sys., incl. 1,000 ft. deep well, pump, pumphouse, steel tank on tower, 2-to 4-in. distr. mains, hydrants, valves and boxes, etc. **$75,000-$80,000.** CD 5/14—ENR 5/22.

Mo., Winfield—Village, F. E. Birkhead, clk., Winfield, postponed bids to have been opened about Sept. 1, WW and distr. sys., incl. supply, pump, pumphouse, elevated steel tank, distr. sys. 2- to 6-in. c.i. mains, hydrants, valves, and boxes, etc. **$67,372-$70,000.** CD 5/14—ENR 5/22.

Pa., Charlerol—Charlerol Boro, 325 McKean Ave., Aug. 19, WW imprvs., Contrs. 1 and 2, from E. H. Dobson, 145 Westland Dr., Pittsburgh. **$33,900** and **$31,795** respectively. CD 7/29—ENR 8/7.

N. C., Charlotte—City, H. A. Yancy, mgr., Aug. 21, WW imprvs., Hoskins Reservoir 2, from Blythe Bros. Co., 424 S. Brevard St. **$185,756.** CD 8/13.

Pa., Southampton—Upper Southampton Municipal Authority, Southampton, water supply sys., tank and tower, from Pittsburgh-Des Moines Steel Co., Neville island, Pittsburgh, **$45,200;** well and distr. sys., and pump house, from Bucks Co. Constr. Co., South Langhorne, **$129,147.** Gannett, Fleming, Corddry & Carpenter, Inc., 3700 Derry Paxtang, Harrisburg, engrs.

Tex., Mason—City, Mason, Aug. 26, water supply and reservoir, from Taylor Constr. Co., P.O. Box 648, Taylor. **$68,800** and **$59,163** respectively. CD 8/8—ENR 8/14.

Tex., Odem—City, Aug. 29, water distr. sys., from Truehart & Caldwell, 509 American Hospital & Life Bldg., San Antonio. **$33,155.** Est. $52,000.

CONTRACTS AWARDED

Kan., Wichita—City, well houses, to Jensen & Ridge, Box 1918. **$23,888.** Bids 8/12. CD 8/5.

Kan., Wichita—City, Wichita, WW imprvs. filter plant extens., filter and chemical equip., to Martin K. Eby, 610 N. Main St., Wichita. **$881,497.** Bids 8/12. CD 8/5 under Pub.

Md., Frederick—City, water tank tower and equip., to Chicago Bridge & Iron Co., 1700 Walnut St., Phila., Pa. **$146,400.** Whitman Reguard & Assoc., 1304 St. Paul St., Baltimore, engrs.

Minn., South St. Paul—City, J. F. O'Donnell, recdr., 12 in. watermain extens., to Lametti & Lametti, 615 Drake St., St. Paul. **$23,409.** Bids 8/19. CD 5/25/43—ENR 5/27/43.

Mo., Dixon—City, steel water tank on tower, appurtenances, to Chicago Bridge & Iron Co., 1305 W 105 St. and 332 S. Michigan St., Chicago, Ill. **$21,650.** Bids 8/6. CD 7/24—ENR 7/31.

N. D., Bismarck—City, water storage tank, booster pump station, watermains, to Delzer Constr. Co., 110 3 St. **$246,271.** Bids 8/20. CD 8/13.

●**O., Youngstown**—Ohio Water Service Co., G. T. Evans pres., 235 State Struthers St., 2½ m.g. water reservoir between Struthers and North Lima on Little Yellow Creek, to Holmes Constr. Co., Crystal Falls, Mich. Est. **$1,000,000.** Bids 7/14. **(Correction**—contractor.) CD 8/14—ENR 8/21.

Okla., Bartlesville — City, elevated water storage tank, to Chicago Bridge & Iron Works, 332 S. Michigan Ave., Chicago, Ill. **$40,800.**

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks $22,500; other public works $40,000; industrial buildings $55,000; other buildings $205,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

✦	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

est. $45,000•••24 in. water supply lines and fittings to Lock Joint Pipe Co., 13 and Gentry St., North Kansas City, Mo., **$171,468,** est. $180,000•••filters and chemical equipment for 5 m.g. filtration plant, to Carrothers Constr. Co., Paola, Kan., **$81,000,** est. $85,000•••5 m.g. filtration plant and river intake to Long-Sinclair Constr. Co., Rialto Bldg., Kansas City, Mo., **$556,729,** est. $575,000. Grand total $859,997. Bids 8/20. CD 7/23—ENR 7/31.

Okla., Muskogee—City, water filtration and pump. plant imprvs., to Ditmars-Dickmann Constr. Co., Muskogee. **$320,000.** CD 2/11—ENR 2/13.

Ore., Estacada—Town, Town Hall, completing WW sys., day labor. **$50,000.** O. E. Smith, city engr.

Ore., Hillsboro—City, City Hall, completing 5 mi. section Cherry Grove water pipeline, to Salem Sand & Gravel Co., 1405 N. Front St., Salem. **$92,352.** CD 9/11/45—ENR 9/20/45.

Utah, Ogden—City, Elizabeth M. Tillotson, city rec., City and County Bldg., secondary water sys., to Armco Drainage & Metal Products, Inc., 631 S. 3 St. W., Salt Lake City. **$191,823.** Bids 8/15. Winn Templeton, City and County Bldg., city engr. CD 2/14/44—ENR 2/24/44.

Utah, Pleasant Grove—Town, H. H. Bullock, recorder, 200,000 gal. rein.-con. reservoir, 9450 ft. c.i. water main, to Young & Smith Constr. Co., 597 Beason Bldg., Salt Lake City. **$23,000.** H. Price, 455 E. Third South St., Provo, engr. Bids 8/13.

Utah, Salt Lake City—City, c/o Irma F. Bitner, recdr., City and County Bldg., 13,700 lin. ft. 48 in. steel pipeline from 17th South St. to Park Reservoir, to United Concrete Pipe Corp., Baldwin, Calif. **$493,890.** Bids 8/7. CD 7/23—ENR 7/31.

Wash., Oroville—Town, Town Hall, concrete storage reservoir, to F. Steige, Oroville. **$34,283.** Est. over $22,500. Bids 8/18. CD 7/22—ENR 7/24.

Ont., Cayuga—Village, G. Hall, reeve, 14 mi. 4- to 6-in. c.i. watermains, to Dick Constr. & Eng. Co. Ltd., Box 565, Welland. **$74,965.** CD 7/1/46—ENR 7/26/46.

STREETS AND ROADS

Construction Reports received since this section went to press will be found in Last Minute Construction Reports.

BIDS ASKED

Bids Asked September 18

Tex., Mission—City, L. Duncan, mayor, sanitary sewer sys. imprvs. incl. 8,500 lin. ft. 6- to 18-in. pipeline, manholes, cleanouts sewage lift, station. $45,000. Plans deposit $15. Valco, Inc., c/o M & M Bldg., Houston, engr. CD 8/22/45—ENR 8/6/45.

Bids Asked September 19

La., Natchitoches—City, City Hall, outfall sewer, sewage pumps, incl. 700 ft. 16 in. c.i. pressure line and 19,700 ft. 24 in. vitr. clay rein.-con. pipeline. Plans deposit $15. Freese & Nichols, 407 Danciger Bldg., Fort Worth, Tex., engrs. CD 5/23—ENR 6/12.

Bids Asked About September 23

O., Marysville—City, 12- to 54-in. storm sewers. $100,000. F. G. Browne, 196 Main St., Marion, engr. CD 1/20—ENR 2/6.

Okla., Chickasha—City, 38,775 lin. ft. sanitary sewer lines, 116 manholes, 435 lin. ft. corrugated metal pipe, sewage disposal plant exten. $250,000. Plans deposit $50. C. C. Pate, Richards Bldg., Tulsa, engr.

Bids Asked September 26

Calif., Centerville—Union Sanitary Dist., 110 N. Main St., sewers, lampholes and manholes. Over $40,000. Plans deposit $10. Harry Goodridge, City Hall, Berkeley, consult. engr.

●**N. Y., Brooklyn**—Pres. Brooklyn Boro, Boro Hall, Zone 2, storm water relief outlet and combined relief sewer, tide gates, pumping station, dry weather flow connection from head of Gowanus Canal to Butler St.; combined sewers in Butler, Bond, Baltic, Hoyt and Wyckoff Sts., force main in Butler St. $1,600,000.

Bids Asked September 29

Calif., Stockton—City, City Hall, imprvs., addns., to North Sewage Treatment Plant. $200,000. Plans deposit $25. Clyde C. Kennedy, 604 Mission St., San Francisco, archt.